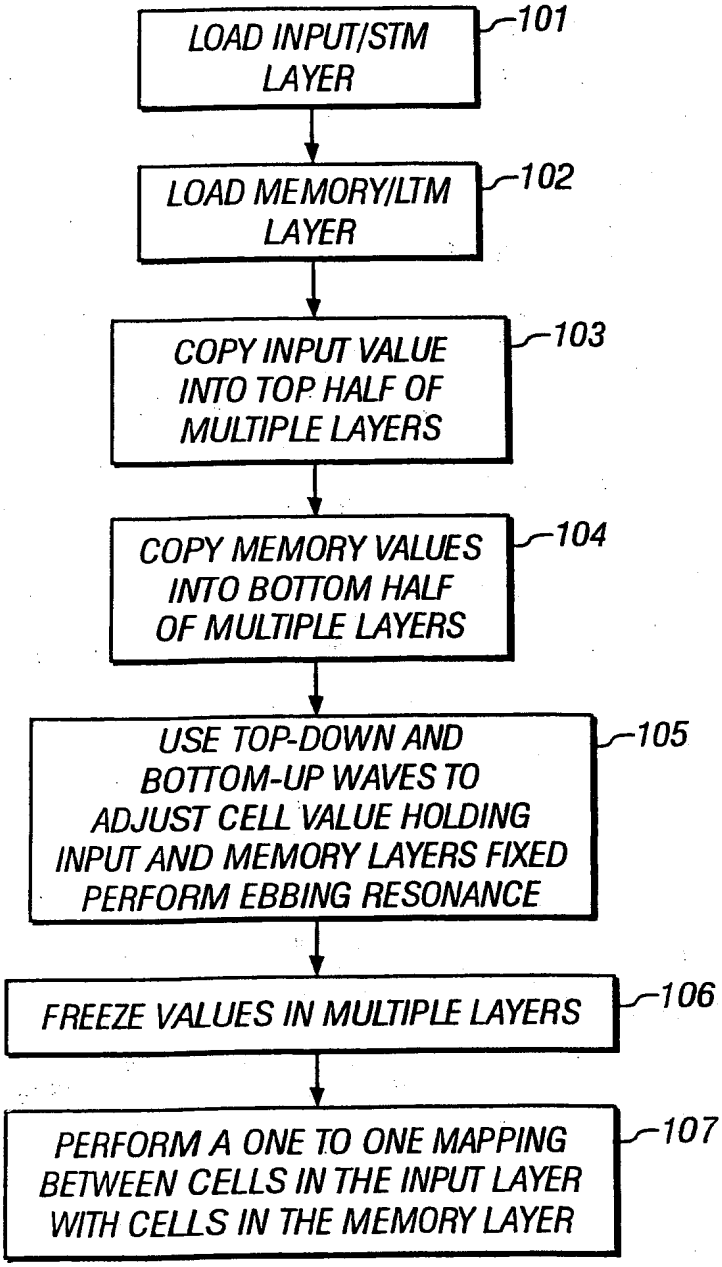
LOAD INPUT/STM LAYER
101
LOAD MEMORY/LTM LAYER
102
COPY INPUT VALUE INTO TOP HALF OF MULTIPLE LAYERS
103
COPY MEMORY VALUES INTO BOTTOM HALF OF MULTIPLE LAYERS
104
USE TOP-DOWN AND BOTTOM-UP WAVES TO ADJUST CELL VALUE HOLDING INPUT AND MEMORY LAYERS FIXED PERFORM EBBING RESONANCE
105
FREEZE VALUES IN MULTIPLE LAYERS
106
PERFORM A ONE TO ONE MAPPING BETWEEN CELLS IN THE INPUT LAYER WITH CELLS IN THE MEMORY LAYER
107

FIG. 1

201	8.5	8.0	2.4	7.5	11.3	8.0	8.0	7.5
203	8.5	8.0	2.4	7.5	11.3	8.0	8.0	7.5
204	8.5	8.0	2.4	7.5	11.3	8.0	8.0	7.5
205	9.0	9.0	6.0	9.2	10.0	10.0	9.4	9.1
206	9.0	9.0	6.0	9.2	10.0	10.0	9.4	9.1
202	9.0	9.0	6.0	9.2	10.0	10.0	9.4	9.1

FIG. 2

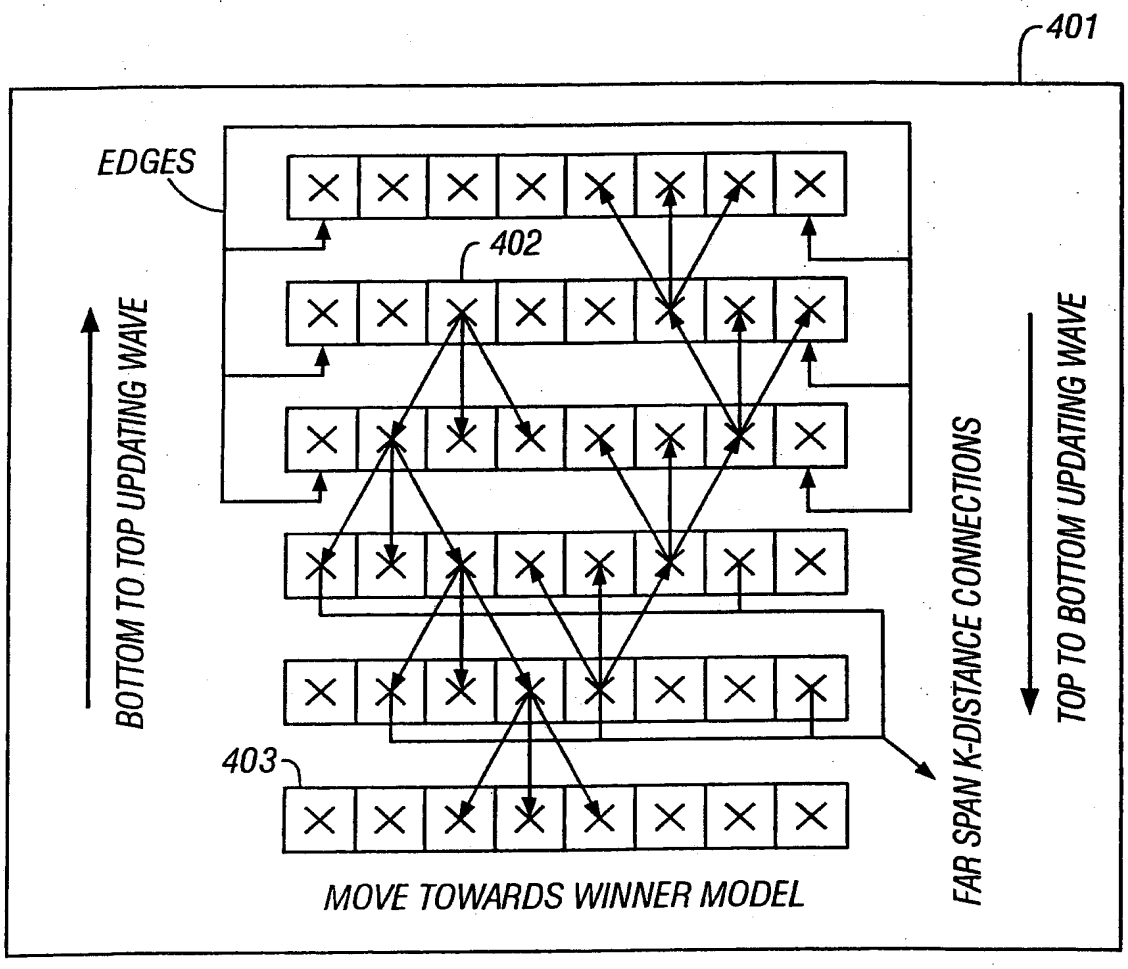

FIG. 4

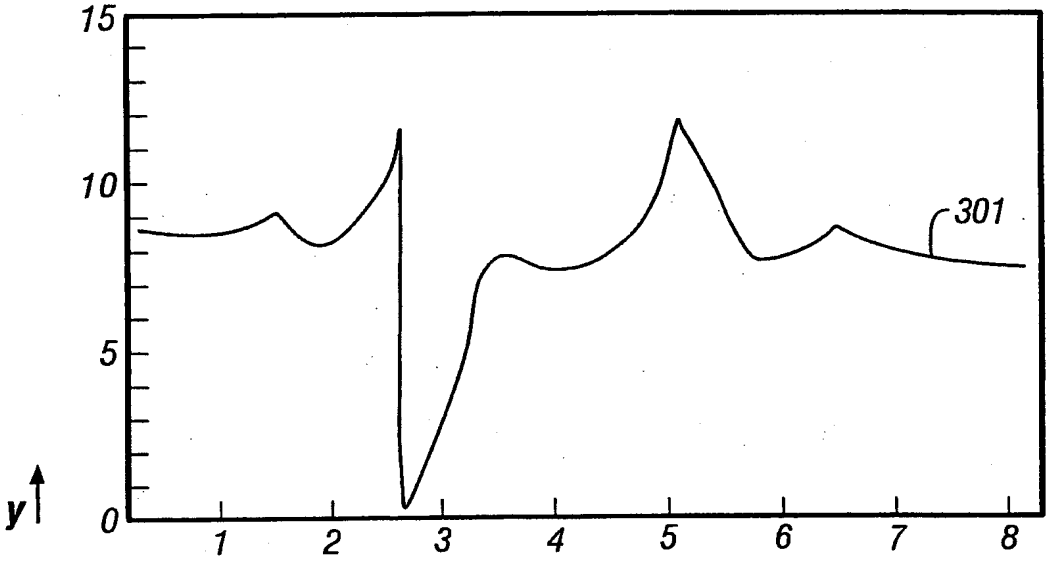

FIG. 3A

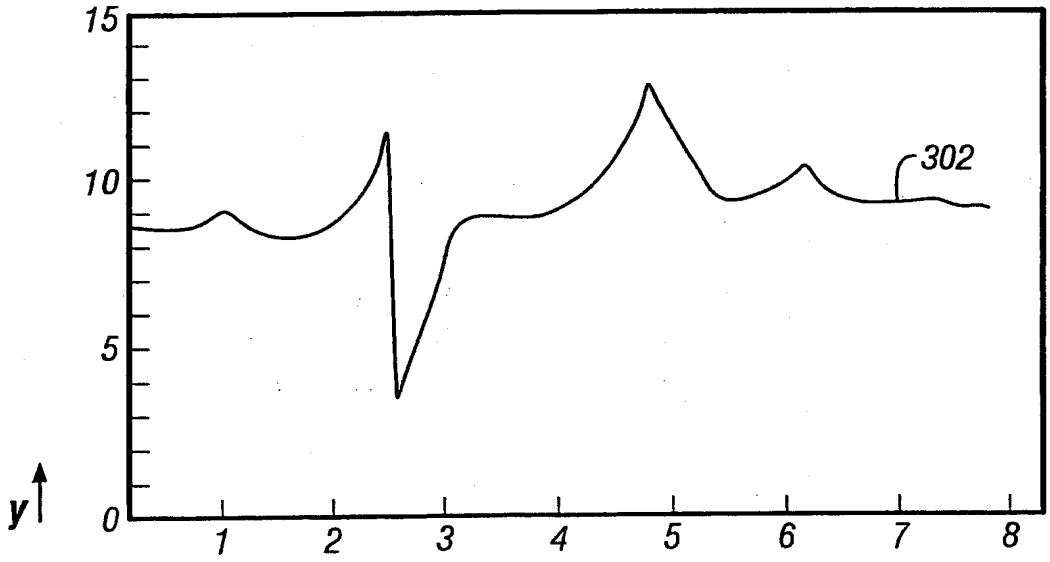

FIG. 3B

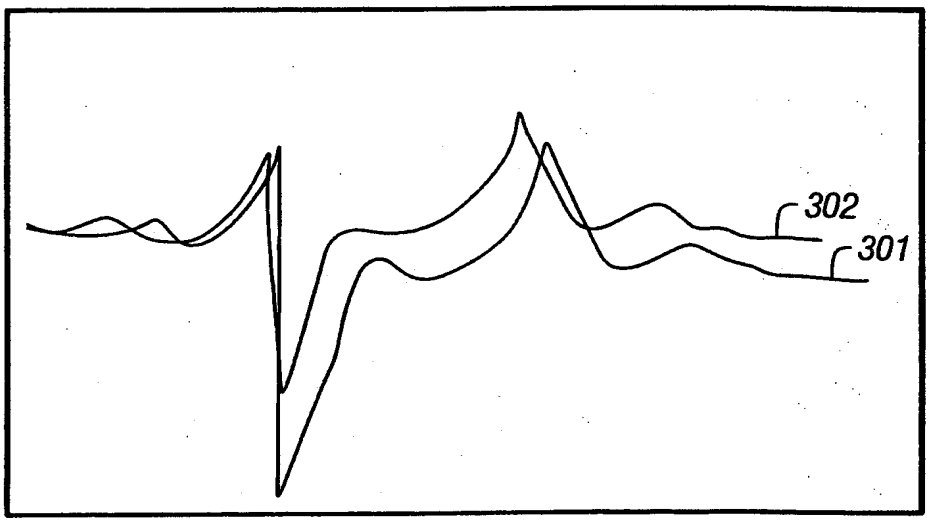

FIG. 3C

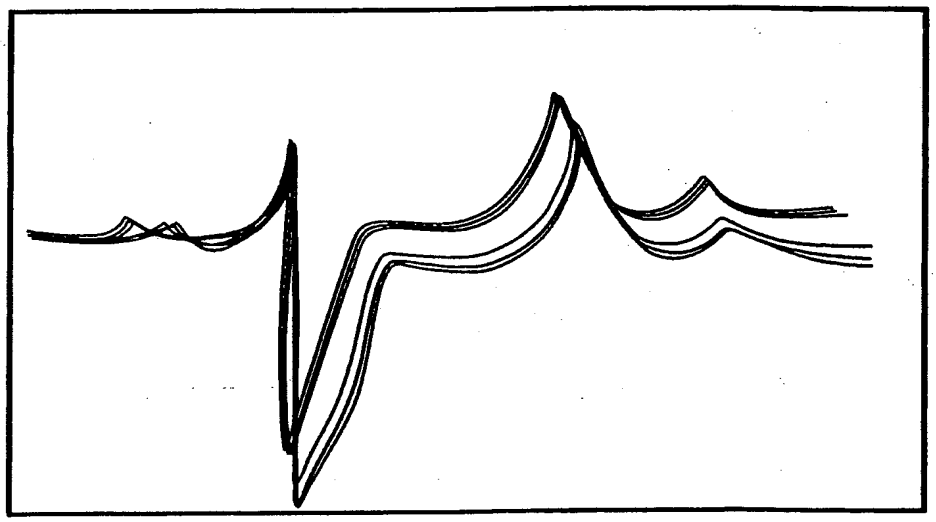

FIG. 3D

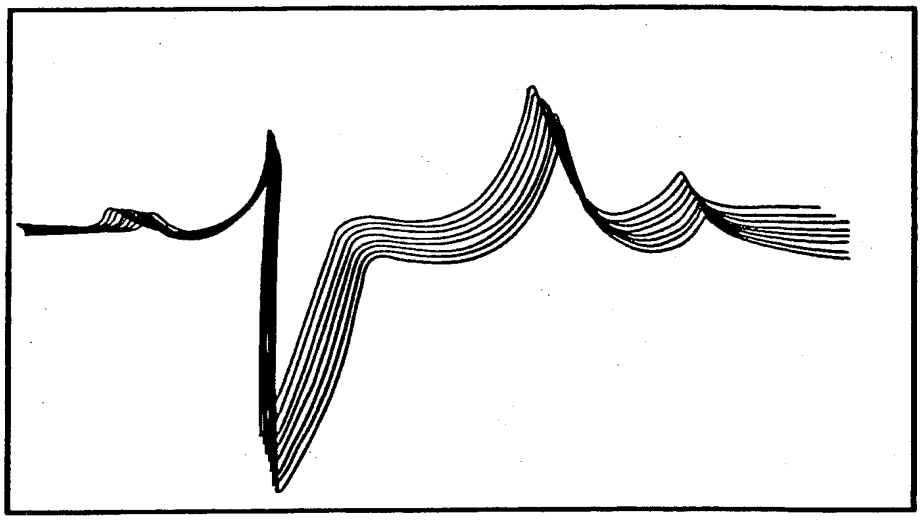

FIG. 3E

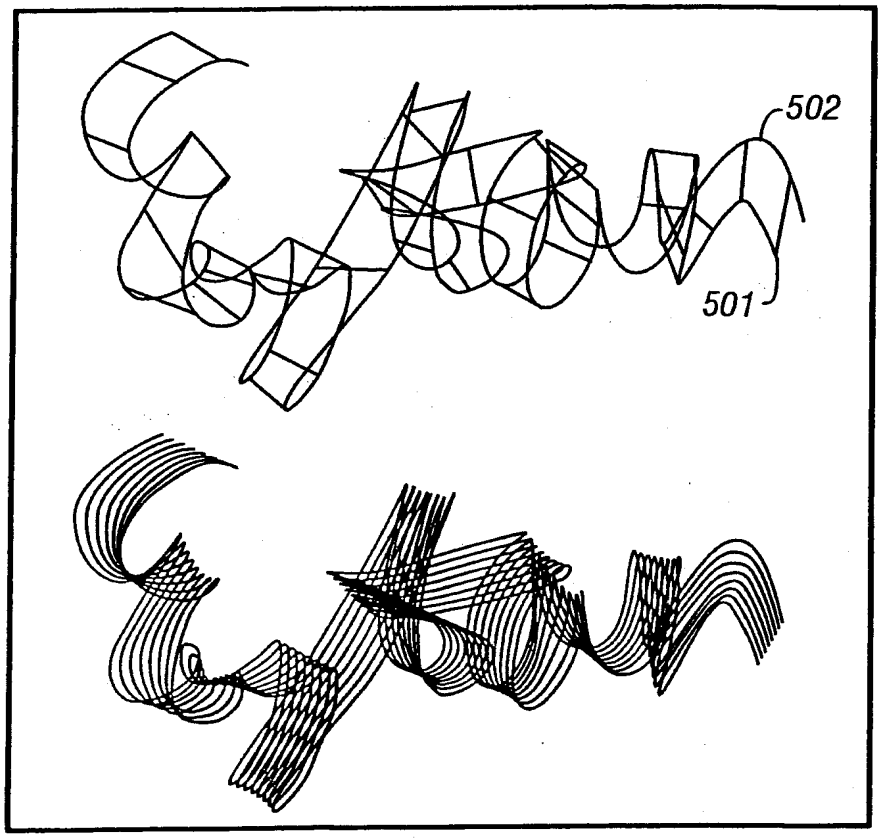

FIG. 5

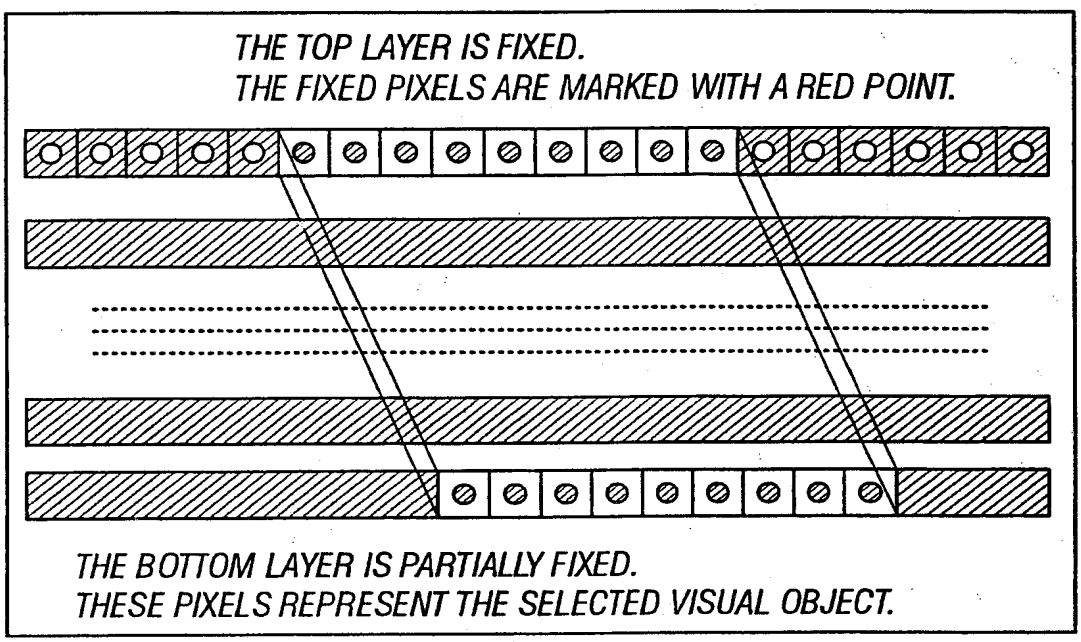
THE TOP LAYER IS FIXED.
THE FIXED PIXELS ARE MARKED WITH A RED POINT.
THE BOTTOM LAYER IS PARTIALLY FIXED.
THESE PIXELS REPRESENT THE SELECTED VISUAL OBJECT.

FIG. 6

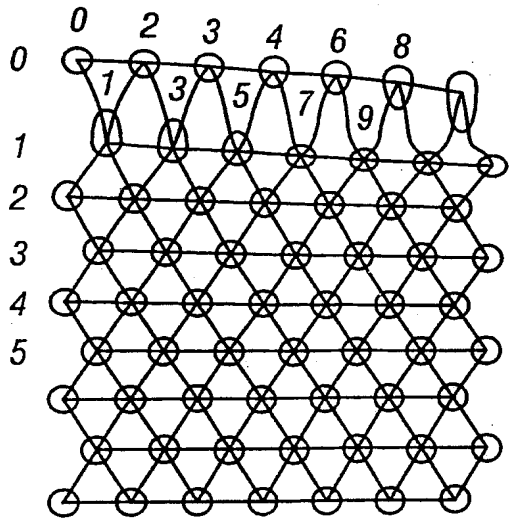
0
2
3
4
6
8
1
3
5
7
9
0
1
2
3
4
5

FIG. 7

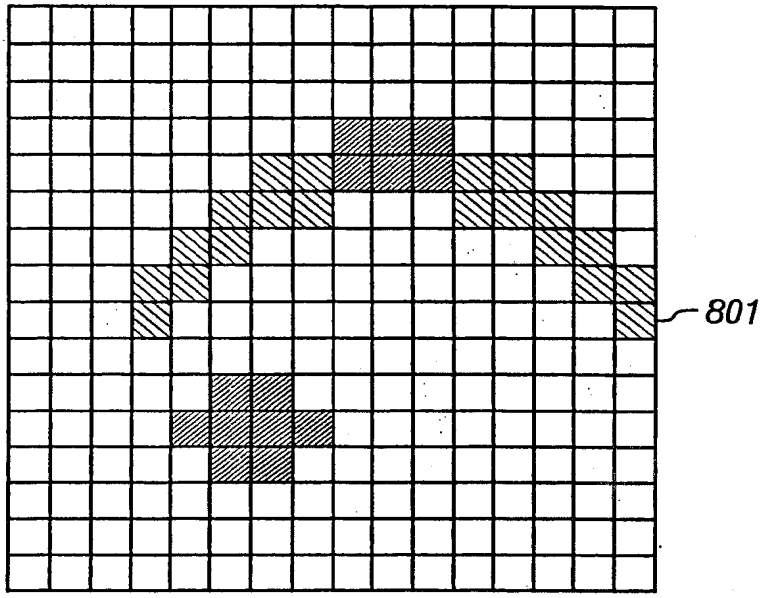

FIG. 8

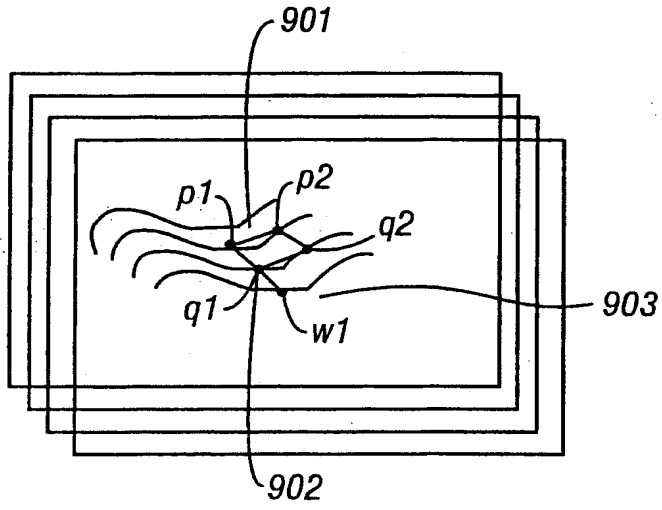

FIG. 9

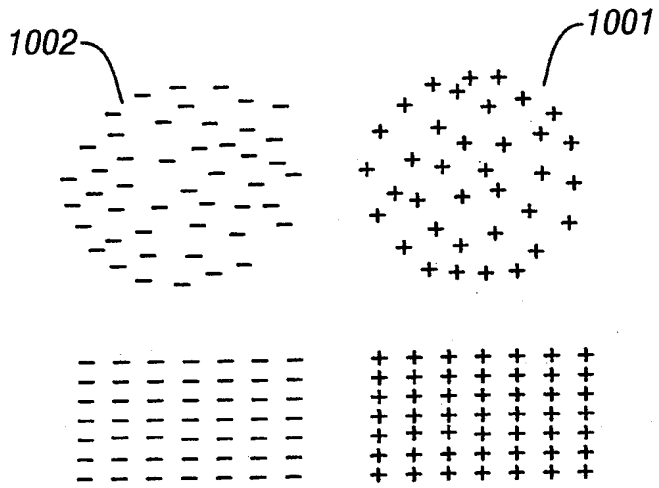
1002
1001

FIG. 10

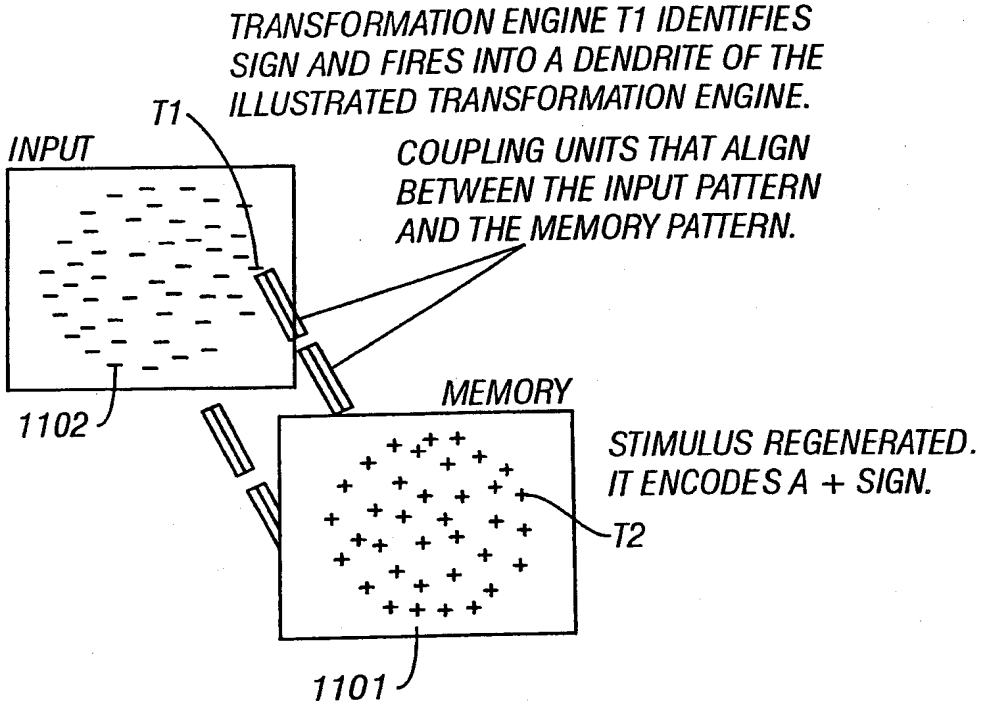
TRANSFORMATION ENGINE T1 IDENTIFIES SIGN AND FIRES INTO A DENDRITE OF THE ILLUSTRATED TRANSFORMATION ENGINE.
T1
INPUT
COUPLING UNITS THAT ALIGN BETWEEN THE INPUT PATTERN AND THE MEMORY PATTERN.
MEMORY
1102
STIMULUS REGENERATED. IT ENCODES A + SIGN.
T2
1101

FIG. 11

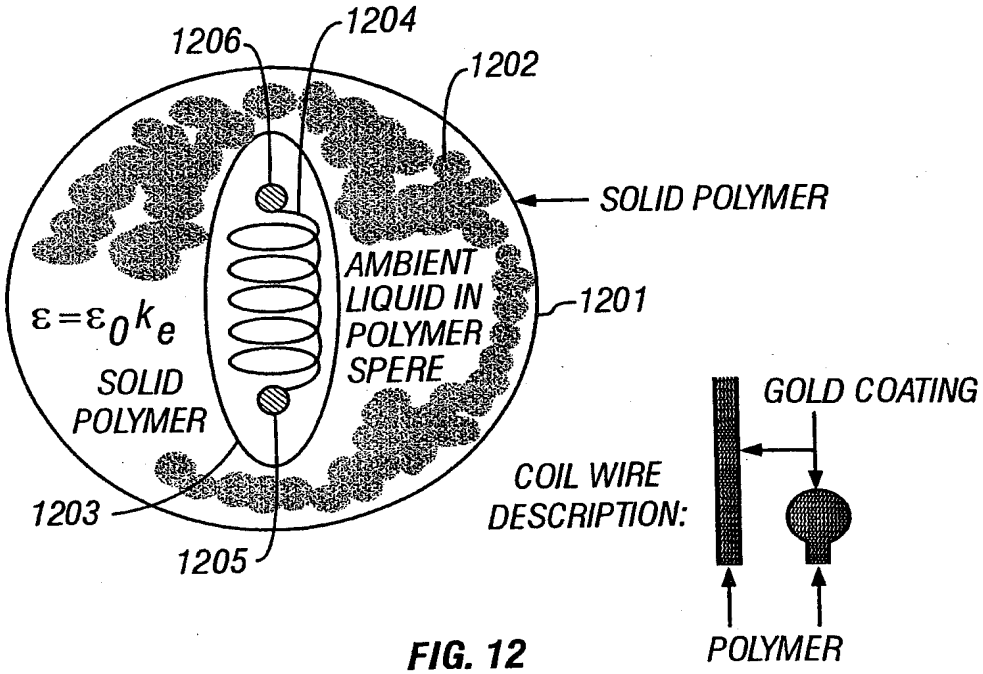

FIG. 12

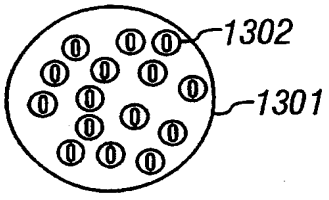

FIG. 13

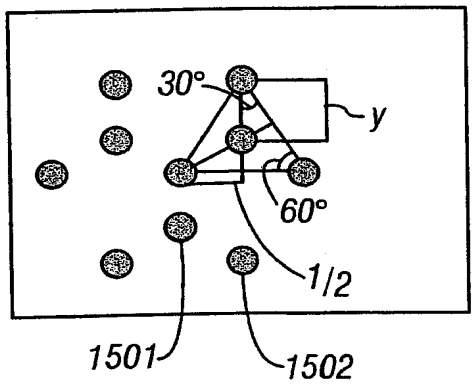

FIG. 16

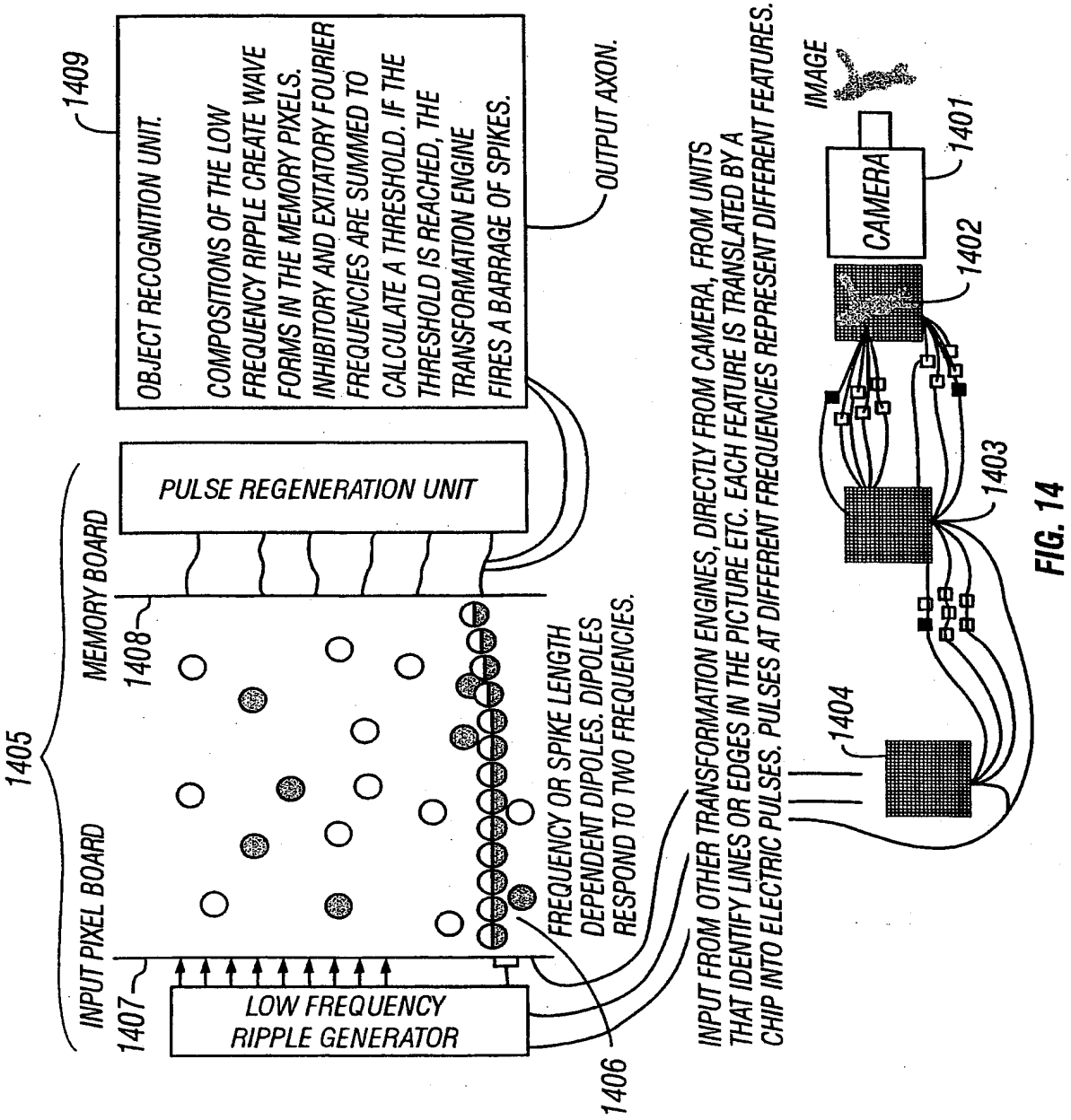
1409
OBJECT RECOGNITION UNIT.
COMPOSITIONS OF THE LOW FREQUENCY RIPPLE CREATE WAVE FORMS IN THE MEMORY PIXELS. INHIBITORY AND EXITATORY FOURIER FREQUENCIES ARE SUMMED TO CALCULATE A THRESHOLD. IF THE THRESHOLD IS REACHED, THE TRANSFORMATION ENGINE FIRES A BARRAGE OF SPIKES.
OUTPUT AXON.
PULSE REGENERATION UNIT
1405
MEMORY BOARD
1408
INPUT PIXEL BOARD
1407
LOW FREQUENCY RIPPLE GENERATOR
FREQUENCY OR SPIKE LENGTH DEPENDENT DIPOLES. DIPOLES RESPOND TO TWO FREQUENCIES.
1406
INPUT FROM OTHER TRANSFORMATION ENGINES, DIRECTLY FROM CAMERA, FROM UNITS THAT IDENTIFY LINES OR EDGES IN THE PICTURE ETC. EACH FEATURE IS TRANSLATED BY A CHIP INTO ELECTRIC PULSES. PULSES AT DIFFERENT FREQUENCIES REPRESENT DIFFERENT FEATURES.
IMAGE
CAMERA
1401
1402
1403
1404

FIG. 14

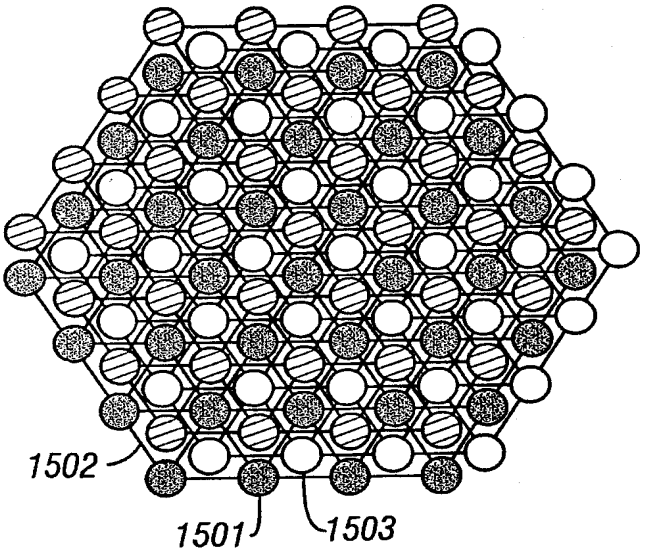

FIG. 15A

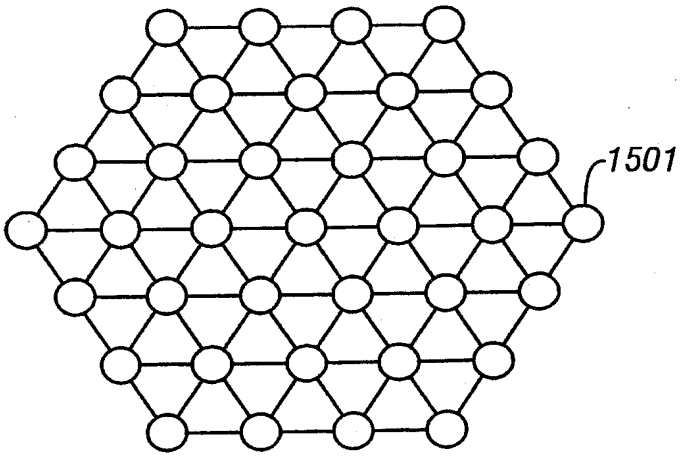

FIG. 15B

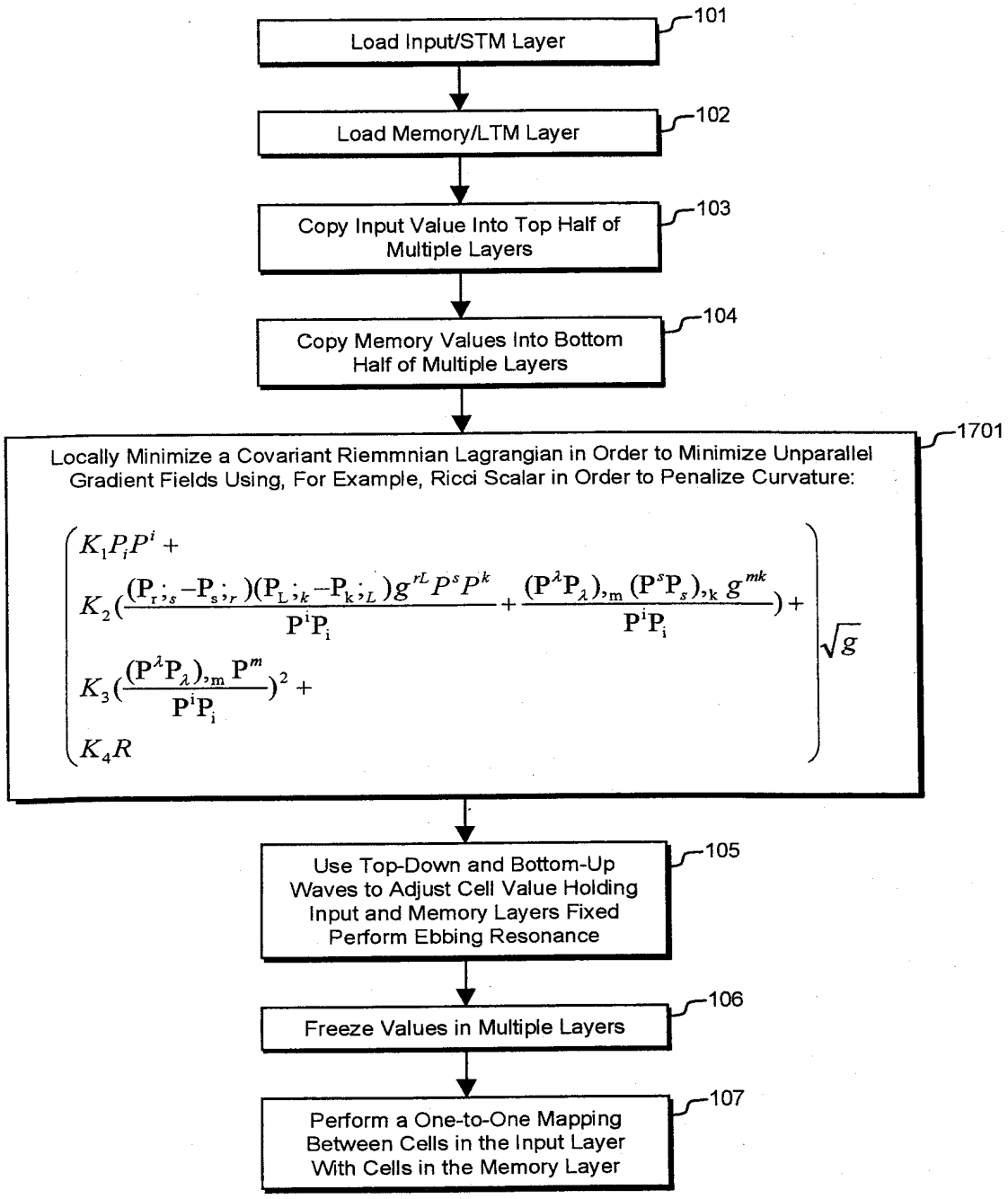
Load Input/STM Layer
101
Load Memory/LTM Layer
102
Copy Input Value Into Top Half of Multiple Layers
103
Copy Memory Values Into Bottom Half of Multiple Layers
104
Locally Minimize a Covariant Riemmnian Lagrangian in Order to Minimize Unparallel Gradient Fields Using, For Example, Ricci Scalar in Order to Penalize Curvature:
1701
$$\left(K_1 P_i P^i + K_2 \left(\frac{(\mathrm{P}_{r;s} - \mathrm{P}_{s;r})(\mathrm{P}_{L;k} - \mathrm{P}_{k;L}) g^{rL} P^s P^k}{\mathrm{P}^i \mathrm{P}_i} + \frac{(\mathrm{P}^\lambda \mathrm{P}_\lambda)_{,m} (\mathrm{P}^s \mathrm{P}_s)_{,k} g^{mk}}{\mathrm{P}^i \mathrm{P}_i} \right) + K_3 \left(\frac{(\mathrm{P}^\lambda \mathrm{P}_\lambda)_{,m} \mathrm{P}^m}{\mathrm{P}^i \mathrm{P}_i} \right)^2 + K_4 R \right) \sqrt{g}$$
Use Top-Down and Bottom-Up Waves to Adjust Cell Value Holding Input and Memory Layers Fixed Perform Ebbing Resonance
105
Freeze Values in Multiple Layers
106
Perform a One-to-One Mapping Between Cells in the Input Layer With Cells in the Memory Layer
107

FIG. 17